

The Applicant disagrees with the Examiner's rejections for the following reasons. As stated in the Amendments dated January 25, 2001 and July 02, 2001, both claims 1 and 11 are specifically directed to a method and apparatus for achieving a minimum stopping distance of a **freight train consist**. The claims also specifically require that the **rail to wheel adhesion** is a significant factor in achieving this minimum stopping distance and that significant detrimental wheel slide should be avoided. The claims also specifically state that the velocity dependence of wheel to rail adhesion must be considered when determining the maximum pressure to be applied to the brake cylinders to stop the train consist.

In the Office Action, the Examiner relies upon the teachings of Cook et al as the primary reference in showing a method and apparatus for achieving a minimum stopping distance of a freight train consist without incurring any significant detrimental wheel slide. The Applicant disagrees with this rejection as Cook et al is directed to a brake energy balancing system for magnetic levitation trains-see col. 1, lines 26+ and col. 2, lines 17-19. Cook et al fails to state or even suggest that the brake energy balancing system disclosed therein could be converted for use with a freight train consist.

Cook et al. includes no reference whatsoever to a freight train consist nor to the use of rails upon which the train runs

upon or "brakes" upon. It is Applicant's position that the present invention is not suggested and/or rendered obvious by the teachings of Cook et al.

Claim 1 specifically recites in subparagraphs (a) and (c) that a computer is disposed on a freight locomotive. Subparagraph (d) of claim 1 requires maximum adhesion between wheels being braked and rail surfaces in contact with the wheels. Claim 11 includes similar limitations to a freight train locomotive and/or freight car in subparagraphs (a), (b), and (c). These limitations recited in the claims are clearly not taught or suggested by Cook et al.

Furthermore, since the mag-lev train of Cook et al. does not run along a rail as does the present invention, Cook et al makes no reference to the use of velocity dependence of wheel to rail adhesion when determining the maximum amount of pressure to be applied to the brake cylinders to achieve stopping of the train while preventing wheel slide with respect to the rails. This is a significant element when determining the maximum amount of pressure to be applied to the brake cylinders. The present application discusses the importance of this element throughout the specification-see pages 11, 16-17 and charts 1-7.

The Examiner's attention is also directed to page 16, lines 10-17 of the specification which discuss the need to minimize variation in wheel temperatures and the need to avoid sliding any one wheel or wheel set along the rails. None of these above

discussed factors are considered in Cook et al. because the mag-lev train of Cook et al. does not run or brake along a rail.

The Examiner relies upon the teachings of Fourie as teaching the use of pre-selected information including velocity dependence of wheel to rail adhesion in controlling the deceleration of the train by appropriately blending pneumatic braking pressure along with electrical control of the braking system. The Examiner states that it would have been obvious to one having ordinary skill in the art at the time of the invention to use the adhesion information of Fourie in the invention of Cook et al because knowing the adhesion characteristics help to calculate a limit to the brake demand signal to prevent unwanted slip. It is the Applicant's position that the combination of Fourie in the Cook et al invention is flawed as one having ordinary skill in the art would not use wheel to rail adhesion characteristics in the Cook et al system as a mag-lev train does not run along a rail. Thus, such information would be useless in determining the maximum amount of pressure to be applied to the brake cylinders to stop the train consist in a shortest possible distance while preventing wheel slide along the rail.

In the "Response to Arguments" section of the Office Action, the Examiner states that "The variables for such things as wheel adhesion would be different between a road and rail, but the systems would still operate the same". The Applicant disagrees.

The mag-lev train of Cook et al. does not brake while the train is running along a rail, but rather is similar to an airplane touching down on a runway, i.e. a planar surface. The Examiner's attention is directed to col. 4, lines 30+ of the reference which discuss the use of a signal indicating whether or not a wheel is locked during touchdown of the wheels and providing a hydroplaning detection signal to guard against hydroplaning of a wheel on touchdown at high speeds. Thus, it is not seen by Applicant how the teachings of Cook et al. can be concerned with the rail to wheel adhesion and minimizing wheel slide during braking as required by the claims when the train does not run along, nor is it braked while running along a rail.

Accordingly, the Examiner is respectfully requested to withdraw the final rejection of claims 1-3, 5-8, 11 and 16-17 under 35 USC 103 (a) as Cook et al. as modified by Fourie fails to render the limitations of the claims obvious.

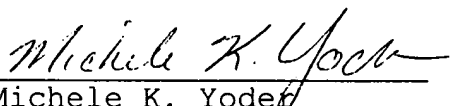
As to the various rejections of claims 9-10, 12-15 and 18-20 under 35 USC 103(a), since these rejections are based upon the combination of Cook et al as modified by Fourie, it is requested that these rejections be withdrawn for the reasons stated above. One having ordinary skill in the art would not be motivated to modify a reference directed to a magnetic levitation train to arrive at a method and apparatus for substantially achieving a minimum stopping distance of a freight train consist without

incurring any significant detrimental wheel slide as recited in the claims.

Accordingly, Applicant respectfully requests withdrawal of the various 35 USC 103(a) rejections over claims 9-10, 12-15 and 18-20 as Cook et al neither alone nor in combination with the cited references fails to render these claims obvious.

In view of the foregoing arguments and amendments, Applicant believes that the application meets all applicable statutory and regulatory requirements. Accordingly, Applicant respectfully requests entrance of the above amendment and allowance of all claims remaining in the application. If the Examiner has any questions regarding this amendment and/or believes that a telephone interview would assist in the advancement of this case to allowance, he/she is invited to contact the undersigned Agent for Applicant.

Respectfully submitted,


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